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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,549	09/23/2003	Yuan-Chi Chang	YOR920030366US1	2911

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EXAMINER

PYO, MONICA M

ART UNIT	PAPER NUMBER
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2161

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/668,549	Applicant(s) CHANG ET AL.	
	Examiner Monica M. Pyo	Art Unit 2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-14 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-14 and 17-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is in responsive to the Amendment filed 6/2/2006.
2. Claims 1-4, 7-14, 17-21 are currently pending in this application. In the Amendment filed 6/2/2006, claims 5-6 and 15-16 are cancelled; claims 1, 4, 7-9, 14, 17-19 and 21 are amended. This action is made Final.

Claim Objections

3. The claim amendment received on 6/2/2006. The changes are accepted and therefore, the claim objections made in a prior Office Action are withdrawn.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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5. Claims 1-3, 7-13 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,890,150 issued to Ushijima et al. (hereafter Ushijima) and in view of U.S. Patent No. 6,519,604 issued to Acharya et al. (hereafter Acharya).

Claims 1 & 21:

Regarding Claims 1 and 21, Ushijima discloses a method during a database query processing operation, comprising the steps of:

- **processing the query having one or more target attributes in accordance with at least a portion of a data set producing query results** as using a specific order number to process the query (Ushijima: col. 5, lns. 62-67; col. 7, lns. 1-23);
- **analyzing the one or more target attributes and from the query results** as a specific order number for a target attribute (Ushijima: col. 6, lns. 20-29; col. 8, lns. 54-59; col. 10, lns. 12-24); and

Ushijima does not explicitly disclose:

- rewriting a query
- appending the query with at least one new predicate corresponding to at least one of the one or more auxiliary attributes

However, Acharya discloses:

- **rewriting a query** as rewriting a query with changes (Acharya: col. 11, lns. 32-36)

- **appending the query with at least one new predicate corresponding to at least one of the one or more auxiliary attributes** as adding an error formula for the sum_error function (Acharya: col. 11, lns. 39-44)

It would have been obvious to a person with ordinary skill in the art at the time of invention to combine this rewriting query process of Acharya into the query processing system of Ushijima to utilize the rewriting query process. Skilled artisan would have been motivated to incorporate the Acharya's teaching of rewriting query process in the Ushijima's query processing system to enhance the efficiently querying each row of information from the database, which discloses "scaling up the aggregate expression and deriving error bounds on the estimate" (Acharya: col. 11, lns 63-67).

Claim 21 is also rejected based upon the same reasoning as Claim 1.

Claims 2 & 12:

Regarding Claims 2 and 12, Ushijima and Acharya disclose the method wherein the at least a portion of the data set comprises sampled records from the data set (Ushijima: col. 7, lns. 48-60).

Claim 12 is also rejected based upon the same reasoning as Claim 2.

Claims 3 & 13:

Regarding Claims 3 and 13, Ushijima and Acharya disclose the method further comprising the step of sampling data records from the data set (Ushijima: col. 9, lns. 61-67; col. 10, lns. 1-14).

Claim 13 is also rejected based upon the same reasoning as Claim 3.

Claims 7 & 17:

Regarding Claims 7 and 17, Ushijima and Acharya disclose the method wherein the step of analyzing the one or more target attributes and one or more auxiliary attributes comprises the steps of:

- extracting statistics for each of the one or more target attributes and the one or more auxiliary attributes from the query results (Ushijima: col. 7, lns. 48-56; fig. 12) and (Acharya: col. 11, lns. 39-44);
- extracting statistics for each of the one or more target attributes and the one or more auxiliary attributes from the at least a portion of the data set (Ushijima: col. 7, lns. 57-65; fig. 13) and (Acharya: col. 11, lns. 39-44);
and
- evaluating a relative selectivity for each of the one or more target attributes and the one or more auxiliary attributes (Ushijima: col. 7, lns. 66-67; col. 8, lns. 1-10; fig. 14) and (Acharya: col. 11, lns. 39-44).

Claim 17 is also rejected based upon the same reasoning as Claim 7.

Claims 8 & 18:

Regarding Claims 8 and 18, Ushijima and Acharya disclose the method wherein the step of evaluating a relative selectivity comprises the steps of:

- comparing a range of statistics from the query results to a range of statistics from the at least a portion of the data set for each of the one or more target attributes and the one or more auxiliary attributes (Ushijima: col. 15, lns. 31-52) and (Acharya: col. 11, lns. 39-44); and

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- determining whether each of the one or more target attributes and the one or more auxiliary attributes is a selective attribute by comparing a ratio of the ranges to a predetermined value (Ushijima: col. 12, lns. 63-67; col. 13, lns. 1-2) and (Acharya: col. 11, lns. 39-44).

Claim 18 is also rejected based upon the same reasoning as Claim 8.

Claims 9 & 19:

Regarding Claims 9 and 19, Ushijima and Acharya disclose the method wherein the step of appending at least one new predicate comprises the steps of:

- evaluating relative selectivity for each of the one or more target attributes and the one or more auxiliary attributes (Ushijima: col. 9, lns. 47-54) and (Acharya: col. 11, lns. 39-44);
- selecting at least one auxiliary data attribute with a high selectivity (Ushijima: col. 9, lns. 55-60);
- forming at least one new predicate (Ushijima: col. 10; lns. 6-11); and
- appending the query with the at least one new predicate (Ushijima: col. 10, lns. 12-24).

Claim 19 is also rejected based upon the same reasoning as Claim 9.

Claims 10 & 20:

Regarding Claims 10 and 20, Ushijima and Acharya disclose the method further comprising the step of performing a query processing operation on a data set with a rewritten query (Acharya: col. 11, lns. 38-55).

Claim 20 is also rejected based upon the same reasoning as Claim 10.

Claim 11:

Regarding Claims 11, Ushijima discloses apparatus a query during a database query processing operation, comprising:

- **at least one processor coupled and operative to: (i) process the query having one or more data attributes in accordance with at least a portion of a data set producing query results as using a specific order number to process the query (Ushijima: col. 5, lns. 62-67; col. 7, lns. 1-23); (ii) analyze the one or more target attributes and one or more auxiliary attributes from the query results as a specific order number for a target attribute (Ushijima: col. 6, lns. 20-29; col. 8, lns. 54-59; col. 10, lns. 12-24);**

Ushijima does not explicitly disclose:

- memory; and
- for rewriting
- append the query with at least one new predicate corresponding to at least one of the one or more auxiliary attributes;

However, Acharya discloses:

- **memory as a memory (Acharya: col. 16, lns. 55-65); and**
- **for rewriting a query as rewriting a query with changes (Acharya: col. 11, lns. 32-36)**

- **append the query with at least one new predicate corresponding to at least one of the one or more auxiliary attributes** as adding an error formula for the sum_error function (Acharya: col. 11, lns. 39-44);

It would have been obvious to a person with ordinary skill in the art at the time of invention to combine this rewriting query process of Acharya into the query processing system of Ushijima to utilize the rewriting query process. Skilled artisan would have been motivated to incorporate the Acharya's teaching of rewriting query process in the Ushijima's query processing system to enhance the efficiently querying each row of information from the database, which discloses "scaling up the aggregate expression and deriving error bounds on the estimate" (Acharya: col. 11, lns 63-67).

6. Claims 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ushijima in view of Acharya as applied to Claims 1-3, 5-13 and 15-21 above, and further in view of U.S. Patent Application Publication No. 2003/0167259 by Casson et al. (hereafter Casson).

Claim 4 & 14:

Regarding Claims 4 and 14, Ushijima and Acharya disclose the method wherein the step of sampling data records comprises the step of sampling from the data, (Ushijima: col. 9, lns. 61-67; col. 10, lns. 1-14).

Ushijima and Acharya do not specifically disclose: every Nth record, wherein N is a positive integer.

However, Casson discloses: every Nth record, wherein N is a positive integer (Casson: pg. 3, [0041]).

It would have been obvious to a person with ordinary skill in the art at the time of invention to combine this search query system of Casson into the rewriting query process of Acharya and the query processing system of Ushijima to utilize the record selection method. Skilled artisan would have been motivated to incorporate the Casoon's teaching of numbered record sampling in the Acharya's rewriting query process and the Ushijima's query processing system to utilize the precision in selection database records for retrieval, which discloses "search queries 41b that generated the optimum consumer response" (Casson: pg. 3, [0039]).

Claim 14 is also rejected based upon the same reasoning as Claim 4.

Response to Arguments

7. Applicant's arguments with respect to claims 1, 11 and 21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica M. Pyo whose telephone number is 571-272-8192. The examiner can normally be reached on Mon-Fri 6:30 - 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Monica M Pyo
Examiner
Art Unit 2161

Leslie Wong
primary examiner

8/16/06